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### Impacts on the Interest Level of Consumers Toward Meal Kit Delivery Services

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Impacts on the Interest Level of Consumers  
Toward Meal Kit Delivery Services

**Abstract**

Meal kit delivery services provide their subscribers with weekly recipe and ingredient kits. This study evaluated the attitudes toward these services and the impact of factors such as self-efficacy on the interest level and intention to subscribe to these services. Results indicate that less confidence in the kitchen increases the interest in meal kit delivery services. Furthermore, consumers who value cooking at home and convenience were more likely to show interest in these services. Implications of these findings for the industry are discussed.

**Introduction**

Meal kit delivery services have become the latest trend in digital disruption. The industry has garnered high levels of attention within the United States, accelerating to a \$1.5 billion market while enticing venture capital firms to back startups in this chic new marketplace (Goldman Sachs 2017 Market Report). While these services are relatively new to the United States, the business model has roots in Europe dating back to the early 2000s. Recently, this marketplace has seen a rapid expansion in the United States, with new entrants offering specialty meals for any diet, taste, or family size. As the market has grown, the price point has remained high. The cost per serving is above what one would expect to pay to prepare a meal at home, leaving a comfortable profit premium for the brand. According to pricing information included on Blue Apron's website, a two-person plan amounts to \$9.99 per serving, with competitors similarly priced (Blue Apron 2017). This price point places meal kits in the same bracket as eating a meal out at a midlevel "fast-casual" restaurant chain.

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For American consumers, meal kit delivery services offer the convenience of fresh ingredients and recipes shipped to their home on a weekly basis. Brands present in the United States include Blue Apron, Plated, HelloFresh, among several other smaller and newer players. Blue Apron reported annual revenues of more than \$800 million dollars in 2016, while competitor HelloFresh was most recently valued at \$2.18 Billion (Barinka and Barr 2016). In the budding marketplace, brands have fought to capture market share and retain customers even as specialty brands and new entrants have worked to find a foothold (Barinka and Barr 2016). These brands have capitalized on a target audience that includes young families and individuals who are timid in the kitchen. Marketing efforts from Blue Apron have included ad campaigns focused on “a better way to cook” and “a better food system” (Hia 2016). These services pitch themselves as a way for their users to eat healthier and make better food choices by cooking meals at home. As an industry, online advertising for free trials or introductory coupons is the primary method for attracting new users to the service. Targeting millennials who value convenience, have low self-efficacy in the kitchen, or are concerned about sustainability, these services have established their value proposition for their audience. In this study, these primary marketing sentiments will be examined against subscribers and nonsubscribers to better understand the benefits that are perceived by the marketplace.

### **Literature Review**

#### *Convenience*

As American society has shifted to value convenience, the arguments made by these services are worth investigating further. Millennials often carry schedules which leave them pressed for time, creating the perception that they don’t have enough time to prepare meals at home

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(Horning et al. 2017). For Millennials, there are many options available should they opt to eat dinner away from home. Easily accessible options include dining out or selecting readymade meals from supermarkets. A rise in food delivery services, such as UberEats and Grubhub, have further expanded these options. There is ample research concerning the nutritional content of readymade meals, which often resemble a dish high in fat, saturated fat and salt (Howard, Adams, and White 2012). These prepared meals are often stand-ins for home cooked meals (Ahlgren, Gustafsson, and Hall 2005; Remnant and Adams 2015). With the advent of meal kit delivery services, the formerly consumer facing tasks of meal planning and recipe preparation are outsourced to the company, leaving the subscriber with time savings utility.

While the emphasis on time savings is not a new phenomenon, Millennials have brought it to the forefront of eating habits. This shift away from traditional family recipes has been connected to negative attitudes toward meal preparation among Millennials (Murry et al. 2016). These barriers would have been inconceivable just two generations ago. A generation of reluctant cooks is the result of a massive cultural shift in food preferences (Smith et al. 2013). Many of the family recipes and traditions which were once passed down through experiential learning in the kitchen with family members has been replaced by a burgeoning market for processed, fast, and convenient food (Larson et al. 2006). As the share of dual income US households increased during the late twentieth century, parents sought convenient meals to cut down on cooking time (Murray et al. 2016).

While Millennials are often stereotyped as individuals with busy lives who value convenience above all else, meal decisions are made from factors beyond convenience alone (Horning et al. 2017). In a study that focused on purchase reasons for prepackaged meals, purchasers cited a wide variety of reasons, including cost and family taste preferences (Horning et

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al. 2017). This reveals the potential for meal kit delivery services to play an important role in reshaping the way consumers plan and purchase their meals each week.

*H1: Subscribers (vs. nonsubscribers) of meal kit delivery services will (not) perceive that having recipes mailed weekly will save them time. Respondents who place a high value of convenience will be more interested in meal kit delivery services than those who do not.*

### *Increased Self Efficacy*

In addition to the convenience of meal kit delivery services, brands have also cited their services as means to develop greater self-efficacy in the kitchen (Mulay 2014). The barriers to preparing home cooked meals are well documented and diverse. These concerns span from a lack of knowledge to a small number of recipes home cooks feel comfortable preparing (Harmon et al. 2015). The shift from time-honored family recipes to doorstep delivery is marked by a new generation of young families and couples who grew up without having regularly cooked in a kitchen. For many young Americans, college is the first introduction to the idea of cooking on a regular basis. There are numerous barriers to cooking for college students, including limited funds, space, tools and knowledge of cooking, all of which impede their ability to cook regularly for themselves (Escoto et al. 2012; Murray et al. 2016). In this formative period, college students are forced to actively make decisions about their food.

These barriers are a major reason why students opt to purchase readily available and easy to prepare freezer meals; ultimately these barriers point to the formation of poor habits at a critical period in the transition to adulthood. Research has shown that instilling strong cooking and eating habits during childhood can have positive lifelong effects. (Smith et al. 2013). These effects include lifelong habits of meal planning, increased number and variety of vegetable consumption, and a heightened awareness of food issues. (Murray et al. 2016). For this reason, colleges and

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universities may become “instrumental in engaging young adults to develop needed culinary skills” that can “influence their health outcomes later in life” (Murray et al. 2016). The idea that cooking skills would need to be coached at universities is a remarkable departure from the family traditions that used to govern the kitchen. Students routinely cite the need for cooking classes to teach them methods to prepare meals that are cost effective, healthy and quick in order to make long-term dietary changes (Murray et al. 2016). These generational shifts have created a market opportunity for meal kit delivery services. Widespread cooking initiatives have not taken root on college campuses and, as a result, there remains a desire for an introduction to cooking even after students leave college.

For meal kit delivery service companies, this a market opportunity to encourage more people to cook at home while simultaneously increasing their self-efficacy in the kitchen. As self-efficacy increases, and cooks become more comfortable in the kitchen, these perceived barriers begin to appear less imposing. This effect has been demonstrated in similar domains. For example, multi-week cooking interventions have documented success in changing meal preparation techniques (Share Our Strength’s Cooking Matters 2012). Participants of these interventions were found to adopt healthier habits that span a wide variety of behaviors, such as, an increase in fruit and vegetable consumption as self-efficacy in preparing these types of foods increased (Condrasky et al. 2010). The same holds true among college students. Among participants who attended weekly cooking classes for one month, 50% “planned to cook healthy food after the program ended” (Jackson, Berry, and Kennedy 2009). In a study focused on child-parent cooking interactions, there was a statistically significant increase in perceived cooking ability following a string of classes and positive changes in self-efficacy related to “setting a good example for others” through cooking (Harmon et al. 2015). As these trends are present among multiple interventions,

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there is a strong case to be made for cooking classes as a means to improve self-efficacy in the kitchen. Meal kit delivery services simultaneously relieve the pain points of cooking while enabling reluctant cooks who are intimidated by the barriers of planning, time, and self-efficacy (Rumble, 2013). Just as traditional cooking classes teach new recipes and meal preparation techniques, meal kit delivery services contain all the vital elements to demonstrate these same behavioral changes.

*H2: Meal kit delivery service subscribers will report that these services have introduced them to new methods of cooking and a wider variety of foods.*

Furthermore, cooking classes feature elements of Experiential Learning Theory (ELT) which draws upon human instinct to repeat processes that are familiar (Kolb 1984). In the kitchen, this means that there is a natural tendency to recreate recipes, rather than constantly explore for new alternatives. For cooks who have a limited knowledge base to draw from, this creates a barrier of not knowing what to cook. This concept of not knowing what to cook has also been cited as a reason why individuals purchase prepackaged foods (Horning et al. 2017). Meal kit delivery services can help to reinforce cooking habits and expand the opportunity for cooks to explore their home kitchens in new ways. Based on the positive effects of ELT, respondents should report being more likely to prepare a recipe they are familiar with.

There are several possible explanations for the relationship between self-efficacy and meal kit delivery service subscribers. One can argue that more confident cooks won't see the need to subscribe to a service of this nature. Alternatively, it is plausible that current subscribers would report higher confidence because of the new skills they have learned through the service. While these are both interesting potential relationships, this study will investigate a third possibility. If the benefits of ELT and cooking classes are transferable to an at home do it yourself kit with aided

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recipe instruction and online assistance, it would reinforce the idea that the value propositions of meal kit delivery services go beyond convenience, but also helps to improve a life skill for their subscribers.

*H3: As a primary component of the value proposition for meal kit delivery services, interest in subscribing to a meal kit delivery service should decrease with higher reported self-efficacy.*

### *Healthfulness in Meal Choices*

Beyond the value propositions of convenience and self-efficacy, there is also the possibility these services can positively impact the diets of their subscribers. By introducing their subscribers to more recipes, a wide variety of foods, and new cooking techniques, subscribers may also benefit from an increase in healthful behaviors. The Construal Level Theory (CLT) of psychological distance says that “the greater the temporal distance, the more likely are events to be represented in terms of a few abstract features” (Trope and Liberman 2003). Food decisions made in advance are less likely to be influenced by the experience of eating. Instead, individuals are more likely to consider decisions based on healthy recommendations. With this, it is also possible that ordering recipe kits in advance may affect satisfaction levels when the recipe kit arrives and is prepared. This concept can be applied to a given recipe. When selected in advance, a recipe may sound very appealing, however that same recipe may not be as appealing on a given night.

There is the potential that satisfaction may be adversely affected by ordering days in advance. However, recent research suggests that when individuals order meals hours in advance, their meal choices were significantly healthier (Van Epps, Downs, and Loewenstein 2016). Previous research has shown that future decisions are more likely to reflect recommended behavior, in this case, healthful meal choices (Rogers and Bazerman 2008). Individuals are more



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objective when they are removed from the experience of their decision. Since meal kit delivery service orders must be placed in advance for the upcoming week, subscribers commit in advance to prepare a healthy meal on these predetermined nights. This sense of commitment, by preordering a meal for delivery encourages subscribers to follow through on their plan, as evidenced by the principle of commitment and consistency (Cialdini 1987). This prior planning and preparation reduces the likelihood of eating at a fast food restaurant or ordering an unhealthy meal. Based on the effects of construal level theory and advance ordering, respondents should agree that meal kit delivery services help them make healthier meal decisions.

However, this effect of selecting healthier meals may go unnoticed by respondents. In a recent experiment, even though a clear majority (87%) of participants did not report a change in their choices when ordering in advance, there was a significant decrease in total calories ordered for meals that were ordered in advance (Van Epps, Downs, and Loewenstein 2016). Most notably, the same experiment found that ordering in advance did not change the proportion of the meal consumed or the overall satisfaction of the meal. It is important to note that this experiment did find a diminishing marginal benefit as the time difference between ordering and meal delivery increased (Van Epps, Downs, and Loewenstein 2016). This suggests that there is a window of time when the experience of the meal overrides objective thinking. One potential limit to the relevance this research is that these orders were placed within the same day, whereas meal kit delivery decisions must be placed days in advance. The potential gap between ordering a meal a few hours before consuming it and ordering several days in advance is partially due to the emotions and feelings that play a role in decision making.

By making meal planning decisions further in advance, individuals would be less susceptible to these experiential influences. Similarly, meal consumption is primarily driven by

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preplanning behavior, such that participants who planned to clear their plate were more likely to do so (Fay et al. 2011). While this finding contrasts the idea that satiety is the primary factor in ending a meal, it does support the importance of meal pre-planning as a healthful behavior.

*H4: Subscribers to meal kit delivery services would be expected to report that the service assists them in making healthier meal choices.*

Another measure of healthfulness is the number and variety of vegetables consumed. Cooking interventions have been found to increase the number and variety of vegetables prepared as part of a meal (Morris et al. 2015). This is notable as other research has found that individuals reported that vegetables can be difficult to prepare as a part of a meal (Darian and Tucci 2013). If meal kit delivery services can increase the variety and number of vegetables consumed by overcoming these perceived barriers, their subscribers would receive a positive health benefit. These changes in habits offer lifelong benefits of increased healthfulness in dieting, if the practices are continued long term. Respondents should report that these services encourage them to try new fruits and vegetables through recipe kits.

*H5: Subscribers to meal kit delivery services who believe the brand offers a good variety of new vegetables will report being more satisfied with the service.*

Aside from these value propositions for meal kit delivery services, the meal kit delivery service draws comparisons to research conducted on community supported agriculture groups. In this comparative analysis, we will explore whether meal kit delivery services offer similar benefits to these types of community efforts.

*Community Supported Agriculture*

Community Supported Agriculture (CSA) is a subscription membership model that directly connects farmers and consumers. For a predetermined price, consumers purchase a share of the

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year's harvest from a farm. On a weekly basis, a variety of produce is available for pickup based on seasonal and harvest availability. This model has grown since its introduction in the 1980s, with more than 1,000 CSA communities nationwide (Perez, Allen, and Brown 2003). For farmers, this model shifts the seasonal harvest risk to the CSA members who pay in advance. Like meal kits which are ordered in advance, in most cases, CSA members are not guaranteed certain vegetables for a given week, rather the farm distributes what is available. This unpredictability, where the week to week assortment may vary greatly, is innate to the CSA model. Construal Level Theory may also be useful in understanding the outcomes of membership, where decisions about CSA membership are separate from the week to week experience. Members sign up and pay for this service in advance – a high level or abstract action. This decision is far removed from the weekly delivery of items (concrete action), which may include fruits or vegetables that the individual is not expecting or used to preparing and could subsequently lead to dissatisfaction. Interestingly, even given this uncertainty, CSA members report high levels of satisfaction (87%;  $n = 167$ ) (Durrenberger 2002). This could be a sign that members understand (or even value) the variance in the CSA model. Alternatively, this could represent that CSA members are impartial to the types of vegetables they receive, possibly due to an interest in trying new foods or high levels of self-efficacy in preparing vegetables.

CSAs also help local farmers connect with the community and spread awareness about agricultural issues and responsible growing methods (Perez, Allen, and Brown 2003). For consumers, the appeal is rooted in the guarantee of local fresh produce to incorporate into their diet (Uribe, Windham, and Wharton 2012). CSAs have also been cited as a key way to improve local food systems by increasing visibility among the public (Brown and Miller 2008). Consumers who are members of CSAs report healthier eating habits, eating healthier foods, cooking at home

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more frequently, and eating a wider variety of fruits and vegetables (Perez, Allen, and Brown 2003). In the same study, eighty one percent of CSA members surveyed ( $n = 274$ ) reported some change in their eating habits after joining a CSA (Perez, Allen, and Brown 2003).

*H6: Based on this literature, we expect meal kit delivery service subscribers to report similar attitudes toward how their food is grown and changes in their eating habits.*

Prior research has found a relationship between CSA membership and an affinity for “sustainability behaviors” and increased “ecological sensitivity” (Uribe, Windham, and Wharton 2012). Yet no research has examined whether these same affinities and behaviors are exhibited by subscribers to meal kit delivery services. Certain elements of a CSA are explicitly incompatible with a digital approach, such as connecting with a local farmer on a weekly basis. To supplement this, co-creation tactics can serve as a medium for meal kit delivery service brands to connect their user communities digitally (Rumble 2013). There is the potential for some of these shared benefits, such as a wider diversity of foods and heightened awareness for agricultural issues, to appear in the user communities of both services.

*H7: If the same benefits of CSAs can be transmitted digitally, current subscribers to meal kit delivery services should report a sense of community originating from these services. Current members of CSAs should also report a sense of community, as evidenced by prior research.*

*H8: Consumers who interact with meal kit delivery service brands online should be more likely to report feelings of loyalty toward the brand.*

While this service is delivered digitally, meal kit delivery service brands have the potential to offer these similar benefits and influence consumer behavior toward healthy community outcomes. If a similar relationship is exhibited by meal kit delivery service subscribers, this would

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support the idea that meal kit delivery has the capability to offer digitally equivalent benefits of a CSA.

### *Research Question*

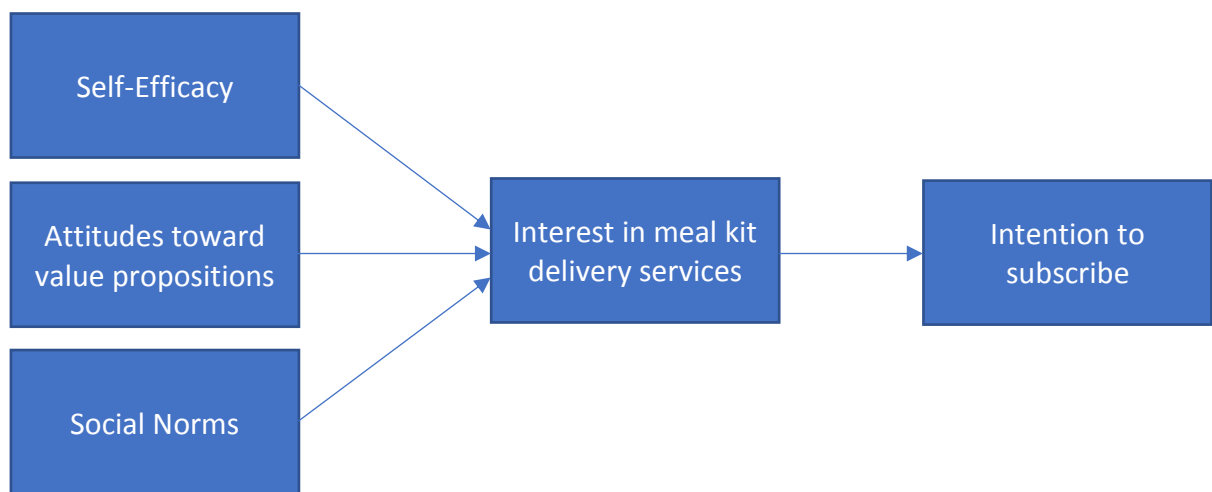
As a new business model in the United States, questions remain whether meal kit delivery services are a signal of a transition from traditional grocers to expanded online delivery or if they are a short-term trend that will remain a niche market. Even as these services have grown in popularity in recent years, they continue to serve a small percentage of US households. To drive new subscriptions, these services have marketed user trials in a variety of ways, from digital ad campaigns to coupons included with online orders from other companies, such as Amazon (Hia 2016). Understanding the driving forces behind subscriptions will help better define this market and its potential for growth. Meal kit delivery services offer a framework that can mirror the positive impacts of increased self-efficacy as seen through traditional cooking classes. These services have the potential to increase the quantity and variety of fruits and vegetables consumed by their subscribers, as seen through CSAs, and may be a medium to educate and inform their subscribers about local agricultural issues. While their audiences may be primarily motivated by other factors such as convenience, meal kit delivery services offer benefits to changes in meal planning, cooking behaviors, and agricultural awareness, but it is unclear whether subscribers are cognizant of these benefits.

*H8: Consumers who acknowledge these changes and benefits will be more likely to report their intention to continue to use a meal kit delivery service long term.*

The model used for this study has been adapted from the theory of planned behavior (Ajzen 1991). This model says that attitudes, perceived control, and social norms all contribute to

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behavioral intentions and ultimately behaviors. This psychological model underscores the variety of factors that are attributable to behavioral intentions. In this study both the interest and intention level will be evaluated. This same model structure will be applied for attitudes, self-efficacy (perceived control), and social norms and their impacts on meal kit delivery services. If this model is applicable to this case, these three factors should be predictive of interest in subscribing to a meal kit delivery service brand.



*Figure 1: This diagram, adapted from the theory of planned behavior, addresses the expected relationship that respondents should report. Self-efficacy, attitudes, and social norms should all play a role in the level of interest in meal kit delivery services and the intention to subscribe to one.*

## Methods

### *Participants*

The survey sample was comprised of adults who live within the United States. Prior experience or knowledge of meal kit delivery services was not a prerequisite for eligibility, but a wide majority (91.6%) of survey respondents were aware of at least one brand. Respondents were recruited through a variety of digital channels including social media, direct email, and outreach

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to community specific boards, such as Reddit. The survey accepted responses for three weeks and collected 452 valid responses. Of these, 367 respondents completed the entire survey.

### *Survey Demographics*

The sample for this survey was primarily female (71%) and had an even distribution across age groups 18-54. This age range is significant as the primary target market for these services spans from young adults to established families. The sample was predominantly white (88.3%), had high levels of educational attainment (71.6% hold at least a bachelor's degree) and were affluent (49.4% of households reported earnings greater than \$100,000; the median income was between \$90,000-99,000). These demographics are representative of the target market for meal kit delivery services, though are not representative United States population. Prior research conducted on Community Supported Agriculture featured similar samples, focusing predominantly on highly educated females.

### *Survey Design*

The survey was designed in Qualtrics and adapted measures from existing research. Results were analyzed using the IBM statistical software package SPSS. Questions were created on five point Likert scales to test respondents' attitudes toward meal preparation, self-efficacy, grocery shopping, and cooking habits. These questions were formulated to best account for the variety of contributing factors that encompass the perceived value of meal kit delivery services. Questions focusing on self-efficacy originated from research conducted on traditional cooking classes and interventions (Larson et al. 2006; Morris et al. 2015; Murray et al. 2016 ). Similarly, questions addressing attitudes toward cooking at home were derived from prior research addressing vegetable purchasing and consumption habits along with recipe usage (Morris et al. 2015; Horning et al. 2017). Questions targeting the relationship between meal kit delivery services and

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community supported agriculture organizations were derived from findings in similar research studies that found relationships between membership and food attitudes (Perez, Allen, and Brown 2003; Schnell 2013; Uribe, Winham, and Wharton 2012).

To test the interest and intention of the respondents toward meal kit delivery services both indirect and direct questions were used to measure these sentiments. Indirect measures included questions focused on meal kit delivery services to save time, increase interest in cooking at home, and make cooking easier. These areas of focus were determined based on value propositions conveyed through marketing efforts by leading brands in the market, including Blue Apron, HelloFresh, and Plated. The two direct questions asked respondents whether respondents were interested in subscribing to a meal kit delivery service and their intention to subscribe. These direct and indirect measures exhibited high inter-item correlations ( $\alpha = .878$ ). Notably, respondents gave more favorable responses to the indirect measures than to the direct measures. Respondents reported that a receiving a meal kit each week would save them time (mean = 3.74), increase their interest in cooking at home (mean = 3.50) and making cooking easier (mean = 3.76). Compared to the direct measures, where respondents reported that they are less interested in subscribing to a meal kit delivery service (mean = 2.74) and are unlikely to subscribe (mean = 2.12).

## Results

### *Meal Kit Delivery Service Subscription*

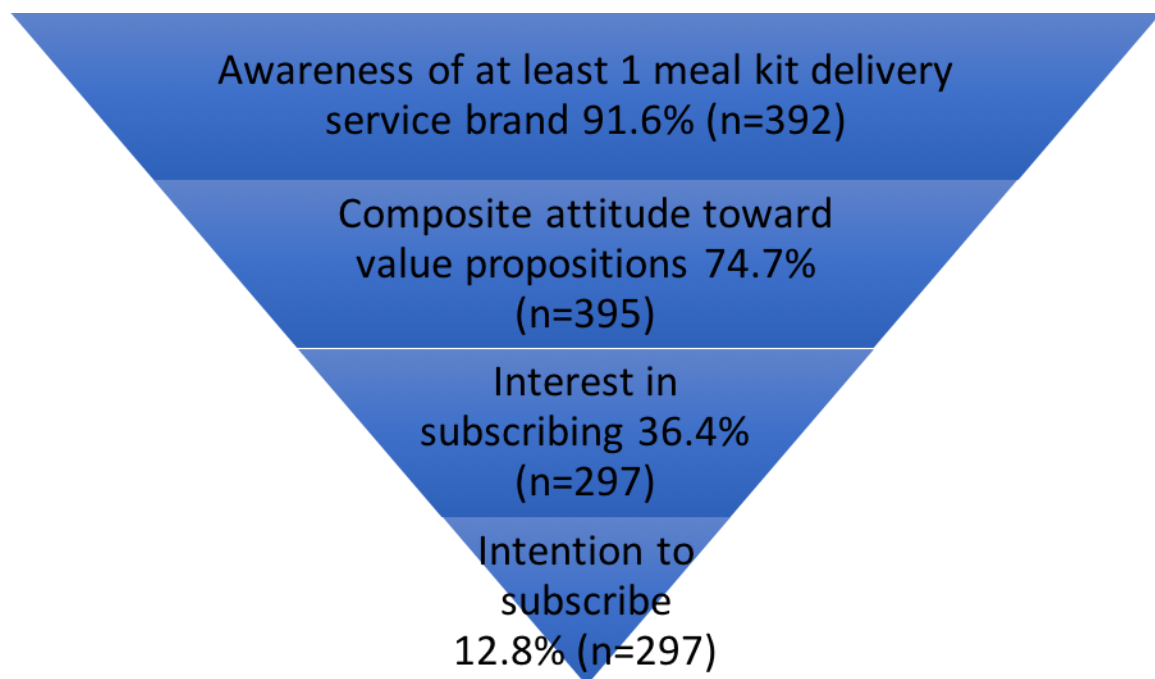
Among meal kit delivery service subscribers, the sample included 85 responses of current and former subscribers to at least one of the services (21.7%  $n = 392$ ). Of this subset, subscribers were younger (40% reported ages under 34), more educated (84.4% hold at least a bachelor's



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degree) and more affluent (60.8% reported household earnings above \$100,000) than nonsubscribers.

While no meal kit delivery service brand saw universal recognition among respondents, 91.6% of respondents were aware of at least one brand. Respondents largely agreed with the primary value propositions of meal kit delivery services, a composite measure of the three indirect measures of interest found that 74.7% of respondents agreed with the value propositions of time savings, increased interest in cooking at home, and increased ease of cooking at home. However, when explicitly asked about their interest level in meal kit delivery services, just 36.4% of respondents reported they were interested. Between directly asking interest and intention, a similar funneling occurred, with only 12.8% of respondents reporting they intended to subscribe.

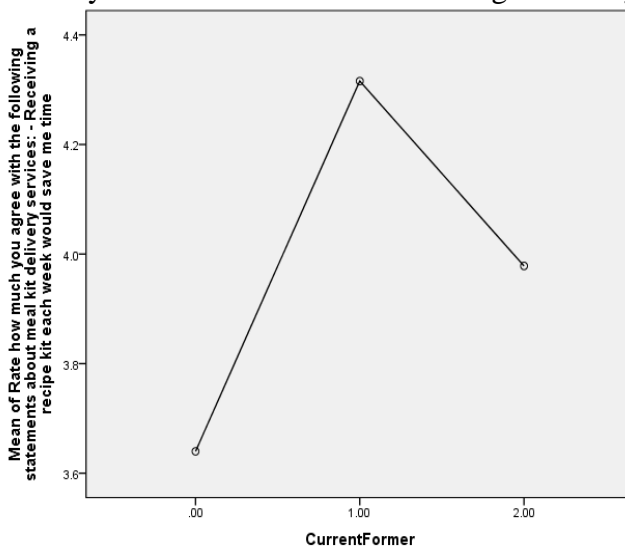


*Figure 2 The funnel depicting above shows the niche nature of meal kit delivery services. While many respondents are aware of these services, there is a steady drop off from awareness to attitudes to the services. Similarly, there are also significant drops between attitudes and interest in subscribing, as well as the intention to do so.*

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Interest in subscribing to a meal kit delivery service was also examined using a simple linear regression. The model included questions addressing reported level confidence, agreement that receiving a meal kit would time the respondent time, and that a meal kit would interest their interest in cooking at home. The regression was predictive of interest in subscribing [ $F(3,293) = 62.689, p = .000$ ], with an  $R^2$  of .391. Interest in subscribing is equal to  $.639 + .412$  (increase interest in cooking at home) when interest in cooking at home is measured on a five point Likert scale. Interest in subscribing increased .412 points for each 1 point increase on the Likert scale. The regression was significant all three predictors “confidence in cooking abilities” ( $p = .011$ ), “recipe kit would save me time” ( $p = .000$ ), “recipe kit would increase interest in cooking at home” ( $p = .000$ ).

Consumers who agree that meal kits would increase their interest in cooking at home are most likely to be interested in subscribing. This key value proposition was also reflected in the



*Figure 3: Interest in cooking at home is measured among current, former, and nonsubscribers to meal kit delivery services. Current subscribers (condition 1.0) reported the highest mean of any group (mean = 4.32). Former subscribers (condition 2.0) reported a significantly lower mean = 3.98 [ $t(2)=9.16; p=.000$ ].*

means plot depicted in figure 3. A one-way ANOVA was conducted to compare the effect of increased interest in cooking at home for current, former, and nonsubscribers of meal kit delivery services. There was a significant effect on interest in cooking at home for the three conditions [ $F(2,392) = 9.858; p = .000$ ]. The means for this test shows current subscribers were the most likely of the three groups to agree that receiving a meal

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kit would increase their interest in cooking at home. This effect is possibly due to their excitement of actively receiving these kits each week. Some of the drop off in former subscribers could be related to bias due to other factors that led them to cancel the service.

### *Convenience*

Overall, respondents agreed that receiving a meal kit each week would save them time (mean = 3.74). Respondents who valued convenience were more likely to be interested in subscribing to a meal kit delivery service. Convenience was measured by three questions, “cooking homemade meals is time consuming” ( $r = .259$ ;  $p = .000$ ), “I don’t have enough time to prepare homemade meals every night” ( $r = .189$ ;  $p = .000$ ), and “I have a hard time thinking of new recipes to cook at home” ( $r = .332$ ,  $p = .000$ ). The weak positive relationships between these variables and respondent level of interest in subscribing represent that convenience does play a factor in the likelihood of subscribing to a meal kit delivery service. This falls in line with what would be expected, given the value proposition of these services and the existing research on millennial attitudes toward meal preparation. Of these three variables, only “I have a hard time thinking of new recipes” was significant for the intention to subscribe to a meal kit delivery service ( $r = .202$   $p = .000$ ). This result is attributable to outsourcing recipes to the service, alleviating a nightly challenge for these respondents.

### *Self-Efficacy*

Self-efficacy was measured by a series of questions that asked respondents about their level of confidence, interest in improving their cooking skills, and command of advanced cooking techniques. The questions were presented on a 5 point Likert scale, where 5 represented a strong level of agreement. The sample was generally very confident in their cooking abilities (mean = 3.95), yet still reported not being able to use some cooking methods (mean = 4.30). Confidence

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was negatively correlated with all three indirect measures and both direct measures of interest in subscribing to a meal kit delivery service. Since improving self-efficacy is one of the primary value propositions of these services, this moderate negative relationship supports the hypothesis that more confident cooks will be less interested in meal kit delivery services.

Correlation		Interested in subscribing to a meal kit delivery service	Intend to subscribe within the next year	Receiving a recipe kit would save me time	Receiving a recipe kit would make cooking easier	Receiving a recipe kit would increase my interest
I am confident in my cooking abilities	Pearson Correlation	-.240**	-.250**	-.144**	-.209**	-.210**
	Sig. (2-tailed)	0.000	0.000	0.004	0.000	0.000
	N	297	297	395	395	395

Figure 4: The Pearson correlation matrix for reported confidence in cooking abilities with the direct and indirect measures of interest in presented above. All five measures were significant, revealing a moderate to weak negative relationship.

Using the same regression measuring interest in subscribing ( $F(2,293) = 62.689, p = .000$ ), the relationship between confidence and interest can be modelled such that interest is equal to  $.639 - .125$  (confidence in cooking abilities). This regression shows a negative relationship where interest in subscribing decreases as reported confidence increases. This reinforces the notion that more confident cooks are less responsive to the value proposition of increasing self-efficacy in the kitchen.

Among respondents who are currently Blue Apron subscribers, 92.8% agreed that the service has introduced them to new cooking methods (mean = 4.54;  $n = 28$ ). However, there was a statistically significant difference between the attitudes of current and former subscribers for this question. Former subscribers to Blue Apron were less likely to report that the service introduced them to new cooking methods [(mean<sub>current</sub> = 4.54, SD<sub>current</sub> = .744); (mean<sub>former</sub> = 3.21, SD<sub>former</sub> =

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1.17); ( $t(27) = 32.24, p = .000$ )]. This difference can be interpreted that former subscribers are less likely to attribute new cooking methods to the service itself, possibly due to hindsight bias or a lack of perceived value.

Former subscribers were significantly more interested than current subscribers in improving their skills through cooking classes [(mean<sub>current</sub> = 3.74, SD<sub>current</sub> = 1.005, mean<sub>former</sub> = 4.17, SD<sub>former</sub> = .926) ( $t(82) = -2.071, p = .041$ )]. This is potentially an indication that improving cooking skills requires some degree of live instruction and cannot rely solely on a recipe box.

*Attitudes toward meal preparation*

Current subscribers reported that meal kit delivery services offered healthy recipes to help them make positive meal decisions (mean = 4.18). Respondents were also more likely to be interested in a meal kit delivery service subscription if they felt that cooking homemade meals is time consuming ( $r = .259; p = .000$ ) or if they had a hard time thinking of new recipes to prepare ( $r = .332; p = .000$ ). Both relationships revealed a moderate positive relationship, signaling that respondents see the value in allowing a service to largely handle meal planning to ensure that meals are healthy and nutritious. These findings support the idea the meal kit delivery services can assist their subscribers in making healthy meal choices on a regular basis.

*Satisfaction with meal kit delivery services*

The following analyses focus on Blue Apron specifically as this brand had the greatest number of current and former subscribers ( $n = 62$ ). Current subscribers reported that cooking felt less like a chore since joining the service (mean = 4.14;  $n = 28$ ). Satisfaction with Blue Apron as a brand was examined using a simple linear regression of attitudes toward the basic value propositions. The model included questions addressing the perception of quality, time savings, fit for family tastes, among others. The regression was predictive of satisfaction ( $F(7,19) = 6.218, p$

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= .001), with an  $R^2$  of .696. Subscriber predicted brand satisfaction is equal to  $-1.663 + .695$  (quality) when quality is measured on a five point Likert scale. Satisfaction increased .695 points for each 1 point increase on the Likert scale. The regression was not significant for the variables “cooking has become less of a chore” ( $p = .658$ ) and “this service saves me time” ( $p = .132$ ), but was significant for “this brand is high quality” ( $p = .012$ ), “this brand is a good fit for my family’s tastes” ( $p = .019$ ), “this service has introduced me to new vegetables” ( $p = .020$ ), and “I feel as though I’m part of a community” ( $p = .002$ ).

The data did not support the relationship presented in hypothesis 5; there was no relationship between believing the service offered a good variety and brand satisfaction ( $p = .303$ ). Similarly, there also was no relationship between believing the service offers a good variety and the intent to cancel an existing subscription ( $p = .785$ ). The lack of significance in these measures is likely due to the wide variety of factors that are connected to interest in meal kit delivery services. For example, while a subscriber may not agree the brand has a good variety of options, this may be a less important factor than the time savings aspect.

Respondents who reported that the brand had increased their awareness for agricultural issues were likely to also report high levels of brand satisfaction ( $r = .608, p = .001$ ). This strong positive relationship underscores the hypothesis that customers who acknowledge positive changes in their behavior will be highly satisfied with their subscription. This was accompanied with a strong negative relationship with the intention to cancel within the next year ( $r = -.487, p = .010$ ). A separate variable, whether the service had introduced them to new cooking methods was also significant for satisfaction ( $r = .408, p = .035$ ).

An independent samples t-test was used to evaluate attitudes between current and former subscribers to Blue Apron. Current subscribers gave more positive reviews to brand metrics of

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variety [(mean<sub>current</sub> = 4.36; SD<sub>current</sub> = .989) (mean<sub>former</sub> = 3.65; SD<sub>former</sub> = 1.01) (t(60) = 2.78;  $p = .007$ )] and affordability [(mean<sub>current</sub> = 3.50; SD<sub>current</sub> = 1.11) (mean<sub>former</sub> = 2.73; SD<sub>former</sub> = 1.13) (t(59) = 2.69;  $p = .009$ )], and experiential questions of time savings [(mean<sub>current</sub> = 4.32; SD<sub>current</sub> = .90) (mean<sub>former</sub> = 3.15; SD<sub>former</sub> = 1.15) (t(59) = 4.36;  $p = .000$ )], and cooking with new fruits and vegetables as a result of using the service [(mean<sub>current</sub> = 4.14; SD<sub>current</sub> = 1.01) (mean<sub>former</sub> = 2.48; SD<sub>former</sub> = .97) (t(59) = 6.53;  $p = .000$ )]. Former subscribers reporting lower agreement on “this service introduced me to new vegetables” could be a result of hindsight bias on their time subscribing to the service, or possibility due exposure to a wider variety of vegetables before joining the service. For the other metrics discussed above, the lower agreement is most likely due to changes in attitudes after canceling the service.

Former subscribers cited price as a primary reason for canceling the service, signaling that the average cost per serving is perhaps too high for the value created from time savings and increased confidence in the kitchen. Among former subscribers who gave their primary reason for cancelling, price led all other responses with 49.3% ( $n = 67$ ). Other factors included the variety of options as well as time required to prepare meals.

### *Community and Loyalty*

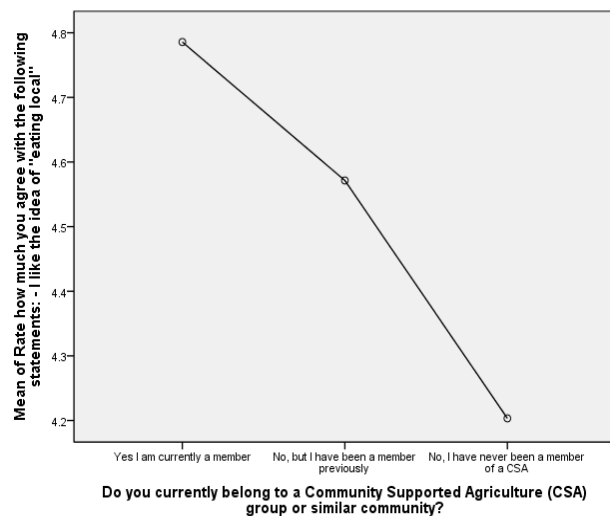
As reported by prior research, one of the major benefits of CSAs is the impact on dietary habits for their subscribers. Members of a CSA, while a small sample size, were significantly more likely to report that knowing where their food as grown was important to them than nonmembers (mean = 4.43  $p = .000$ ). They were also more likely to report that the idea of eating local appealed to them (mean = 4.79;  $p = .002$ ).

A one-way ANOVA was conducted to compare the effect of increased interest in “eating local” for current, former, and nonsubscribers for CSAs. There was a significant effect on interest

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in eating locally for the three conditions [ $F(2,367) = 6.603; p = .002$ ]. The one-way ANOVA also examined the importance of knowing how food was grown for these same three groups [ $F(2,367) = 12.266; p = .000$ ].

These findings are consistent with previous research, where current CSA members reported a stronger connection to seasonality and eating locally grown food (Schnell 2013). The pattern for questions focused on sustainable farming practices and importance for knowing how and where



*Figure 5: Perceptions toward “eating local” was measured among current, former, and nonsubscribers to CSAs. Current members reported the highest mean of any group (mean = 4.79;  $n = 14$ ). Former and nonsubscribers reported a significantly lower means in a nearly linear pattern as shown by the means plot here.*

food is grown is diagrammed by the means plot, with the strongest level of agreement coming from current members, and a nearly linear drop to former members and then finally those who have never been a CSA member (Figure 5). A similar relationship between current and former subscribers emerged among CSA members.

Those who currently belong to a CSA were reported that they find a sense of community from CSA (mean = 4.50;  $n = 14$ ). This mean was significantly higher than former CSA members reported (mean = 3.61;  $n = 56; p = .000$ ).

The online interaction between respondents and meal kit delivery services was not predictive of a sense of community or loyalty. A small proportion of respondents reported interacting with a meal kit brand online in any capacity. The most popular interaction was “liking” posts by these companies (16.6%;  $n = 459$ ) followed by posting a picture of a recipe made using the service (7.4%). Among Blue Apron current and former respondents, 57.6% reported posting a



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picture of a recipe they made using Blue Apron ( $n = 59$ ). Even with this majority, it did not prove to be predictive of loyalty or a sense of community. This suggests that while subscribers are interacting with brands online, the brands are not effectively facilitating a level of online community engagement, a key factor in building customer loyalty.

### Discussion

The purpose of this research was to examine the attitudes of meal kit delivery services among current, former, and nonsubscribers. Attitudes toward convenience, cooking at home, and new recipes proved to be predictive of interest in meal kit delivery services through both direct (interest in subscribing and intention to subscribe) and indirect measures (time savings from recipe kits, increased ease of cooking, and increased interest in cooking at home). These attitudes were also moderately predictive of intention to subscribe, although respondents were less open to this level of commitment. These findings help demonstrate that the value propositions offered by leading brands fall in line with consumer expectations for these services. Convenience and self-efficacy both play a role in respondents' interest and perception of meal kit delivery services. This study worked to fill a gap in the existing body of literature on meal kit delivery services and the potential relationship to the benefits reported by CSA members.

The relationship between current and former subscribers showed a drop off in the perception of the value propositions after canceling the service. This finding is noteworthy, as former subscribers reported similar attitudes as those who have never subscribed to a meal kit delivery service.

CSAs have been found to foster environments of increased food awareness, local preferences, and underscore the importance of sustainably grown food. Meal kit delivery services such as Blue Apron have worked to incorporate these same sentiments into their marketing efforts,

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focusing on a farm-to-plate marketing pitch that eliminates traditional, but in their view unnecessary, steps in the distribution network.

While meal kit delivery services have garnered an increased share of press and venture capital in recent years, many respondents were only aware of the largest national brands. As shown in figure 6, respondents in this survey were most familiar with Blue Apron. The cumulative

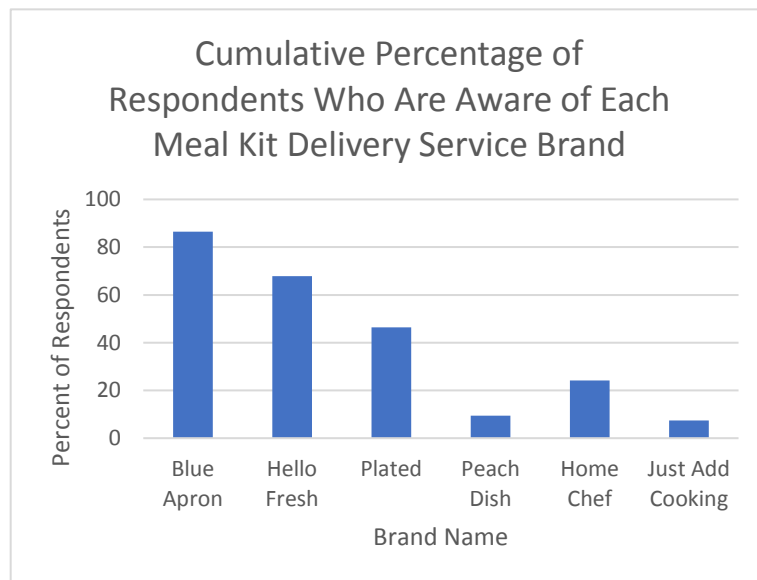


Figure 6: Blue Apron had the highest level of brand awareness, but no meal kit delivery service brand was universally recognized by respondents.

percentage of respondents who were aware of the brands showed a clear pattern. Following Blue Apron (86.5%) was HelloFresh (67.9%) and Plated (46.4). Smaller regional brands such as Just Add Cooking and Peach Dish had substantially lower brand awareness. As these services continue

to grow and diversify, consumers will be presented with an increasing

number choices in this marketplace. Newer brands are likely to focus on niche diets or ethnic cuisines to differentiate themselves from the established players (Kolodny 2017). As the theory of co-creation is reinforced, consumers who are actively engaged with the brand are more likely to be loyal subscribers (Rumble 2013). The data collected from this survey paints a similar picture, even among those who have not yet subscribed to a meal kit delivery service.

Interest in meal kit delivery services was moderately correlated with self-efficacy, attitudes toward convenience, and cooking homemade meals. Respondents were more likely to show interest in the indirect measures of interest compared to the direct and explicit measures of interest

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and intention to subscribe. This disparity could potentially be a result a lack of awareness for the individual value propositions of meal kit delivery services. For brands in this industry, continuing to promote these value propositions is key.

### *Managerial Implications*

Industry representative can benefit from the findings of this study. Based on regression analysis, marketing efforts should be focused to value propositions that resonate with consumers and are predictive of satisfaction and loyalty among current subscribers, such community engagement, introduction to new vegetables, and fit with family taste preferences. Similarly, interest in subscribing was most strongly connected to convenience and increasing interest in cooking at home. While many of the measures in this study found that respondents agree with the primary value propositions, respondents were less likely to turn this agreement into a subscription to the brand. For these brands this is both an opportunity and a challenge.

As evidenced by the data concerning community feel and online interactions with brands, brands need to continue to improve customer loyalty through online engagement. One of the chief concerns for any subscription based model is customer retention. For this business model to be successful long-term, subscribers should report increased loyalty as length of time subscribed increases. If this is not the case, the business model of meal kit delivery services could face a serious problem. This has been evidenced in recent reports, citing setbacks for leading brands in reaching profitability and maintaining subscribers (Kolodny 2017; Barinka and Barr 2016).

### *Limitations and directions for future research*

This survey addressed the attitudes and interest in meal kit delivery services, however experimental methods might be useful to better understand the causality of subscription or

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cancellation, as well as to identify whether sentiments developed before or after subscribing to a meal kit delivery service.

The sample in this survey was not representative of the United States population. Future research may seek representativeness or more purposive sampling of meal kit delivery service subscribers. Differences in attitudes among income levels educational attainment, region, race, or age are all patterns worth investigating further and were not possible with limited subsections. While this sample was less than representative of the general US population, the respondents display similar characteristics with prototypical meal kit subscribers.

The data collected from this survey helped to better define the characteristics of meal kit delivery service subscribers. Future research should focus on establishing causality in changing habits, such as testing individuals before and after subscribing to one of these services. One of the limitations of this survey was that it could only measure intent, rather than observable changes in behavior.

Another important consideration of meal kit delivery services, and online grocery shopping, is the environmental impact of these business models. Survey respondents cited this as a reason for cancellation via the “other” field in the survey. Including questions about environmental attitudes and the perceived environmental impact of meal kit delivery services in future questions would be worth investigating. Finally, this survey did not seek to address the relationship between length of time as a subscriber and attitude toward meal kit delivery services. In future research questions about time as a subscriber and the method of joining (whether it be from a referral, trial offer, or another reason) would be additional valuable pieces of data to test.

### *Conclusion*

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This survey aimed to identify patterns between meal kit subscribers and the interest in these services. While meal kits remain a niche market, the market has continued to grow. The larger brands had higher levels of awareness, but no brand reached universal awareness among the sample. In these services patterns emerged between current and former subscribers that are noteworthy for subscription based services. Former subscribers' attitudes toward key measures were more likely to align with nonsubscribers than with current subscribers, suggesting that the industry needs to provide additional benefits to maintain loyal subscribers.

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